

REMARKS/ARGUMENTS

Claims 9, 12-13, and 16-17 are pending.

Claims 9, 13, and 16 are amended.

Claims 1-8, 10-11, and 14-15 are canceled without prejudice.

Claim 17 is added.

Support for the amendments is found in the claims and specification (e.g., pages 2, lines 18-27, page 4, lines 5-34, page 7, lines 10-22, page 8, lines 11-15, page 12, lines 16-27), as originally filed. No new matter is believed to have been added.

Applicants thank Examiner Mruk for an interview conducted on May 31, 2007. All rejections asserted in the Official Action were discussed. Applicants explained that Gumbel (6,680,412) is not 102(e) reference. Possible amendments to overcome the prior art rejections were discussed.

Claims 9 and 16 are rejected under 35 U.S.C. § 102(e) as being anticipated by Gumbel et al., U.S. Patent No. 6,680,412, or in the alternative, under 35 U.S.C. § 103(a) as being obvious over Gumbel et al.

U.S. Patent 6,680,412 resulted from a national stage application of PCT/EP01/03850 application, filed April 4, 2001 and published October 18, 2001. However, the WIPO publication is not in English. Therefore, U.S. Patent 6,680,412 does not have a 35 U.S.C. § 102(e) date. At best, PCT publication WO 01/7727 may be used as a § 102(a) type reference.

The claimed invention is directed to a composition comprising an alkoxylate of formula I, wherein a very short propylene-oxide chain consisting of up to one unit of propylene oxide directly connected to a 2-propyl-heptanol radical and a relatively long ethylene-oxide chain of at least 2 to 14 units, wherein the composition has a low content of

the residual alcohol. The specification discusses that a low content of alcohol is advantageous because the composition does not have an unpleasant smell (page 2).

Gümbel discloses alkoxylates of formula (I) (col. 1, line 53, to col. 2, line 19) encompassing a wide range of various alcohol alkoxylates. Although Gumbel's formula (I) encompasses the alkoxylates of claimed formula (I), Gumbel does not disclose the classes of substituents sufficiently limited or well delineated. It is not possible to draw the structural formula or write the name of each of the compounds included in the generic formula before any of the compounds can be "at once envisaged." MPEP § 2131.03. "One may look to the preferred embodiment to determine which compounds can be anticipated." MPEP § 2131.03. Gumbel only discloses examples of alkoxylates comprising other polymerization units in addition to those of the claimed alkoxylates (see Table 1), which are not known to have a low content of the residual alcohols. Gumbel's compound in example 9 (Table 1) comprises 2-propylheptyl, but it is not followed by propyleneoxy ( $r=0$ ). Gumbel's compounds in examples 20-21 comprise at least one ( $r=1$  or 1.5) propyleneoxy, does not comprise 2-propylheptyl, and also comprise other units. Further, Gumbel does not disclose that his compounds have a low content of the residual alcohol.

Gumbel does not disclose the specific amount of zinc and cobalt in his composition, which is important because distribution of the degree of alkoxylation can be adjusted through the use of catalyst (see page 4, lines 24-34, page 6, lines 26-34 of the application's specification).

Gümbel does not disclose a process for the preparation of the claimed alkoxylate in the presence of a double metal cyanide compound as a catalyst.

Therefore, Gumbel does not anticipate the claimed invention.

The reference of Gümbel is not available as prior art in the rejections under 35 U.S.C. 103(a) because the subject matter of the 6,680,412 patent and the claimed invention was

the residual alcohol. The specification discusses that a low content of alcohol is advantageous because the composition does not have an unpleasant smell (page 2).

Gümbel discloses alkoxyates of formula (I) (col. 1, line 53, to col. 2, line 19) encompassing a wide range of various alcohol alkoxyates. Although Gumbel's formula (I) encompasses the alkoxyates of claimed formula (I), Gumbel does not disclose the classes of substituents sufficiently limited or well delineated. It is not possible to draw the structural formula or write the name of each of the compounds included in the generic formula before any of the compounds can be "at once envisaged." MPEP § 2131.03. "One may look to the preferred embodiment to determine which compounds can be anticipated." MPEP § 2131.03. Gumbel only discloses examples of alkoxyates comprising other polymerization units in addition to those of the claimed alkoxyates (see Table 1), which are not known to have a low content of the residual alcohols. Gumbel's compound in example 9 (Table 1) comprises 2-propylheptyl, but it is not followed by propyleneoxy ( $r=0$ ). Gumbel's compounds in examples 20-21 comprise at least one ( $r=1$  or 1.5) propyleneoxy, does not comprise 2-propylheptyl, and also comprise other units. Further, Gumbel does not disclose that his compounds have a low content of the residual alcohol.

Gumbel does not disclose the specific amount of zinc and cobalt in his composition, which is important because distribution of the degree of alkoxylation can be adjusted through the use of catalyst (see page 4, lines 24-34, page 6, lines 26-34 of the application's specification).

Gümbel does not disclose a process for the preparation of the claimed alkoxyate in the presence of a double metal cyanide compound as a catalyst.

Therefore, Gumbel does not anticipate the claimed invention.

The reference of Gümbel is not available as prior art in the rejections under 35 U.S.C. 103(a) because the subject matter of the 6,680,412 patent and the claimed invention was

subject to an obligation of assignment to the same entity on or before the date the claimed invention was made.

Applicants request the rejection be withdrawn.

Claims 9 and 16 are rejected under 35 U.S.C. § 103(a) as being obvious over Dahlgren, WO 94/11331.

Dahlgren discloses alkoxylates based on 2-propyl-heptanol of formula I, wherein a 2-propyl-heptanol is directly attached to at least *two* C<sub>2-4</sub>-alkyl (page 2, lines 1-7). Dahlgren further discloses formula II, wherein 2-propyl-heptanol is first reacted with ethylene oxide and thereafter at least *one* alkylene oxide having 3 to 4 carbon atoms. Dahlgren discloses that preferably 50-100% of all alkyleneoxy groups are ethyleneoxy groups. In those cases where different alkyleneoxy groups are present in the same compound, they may be added randomly or in block (see page 2, lines 1-7). Dahlgren does not disclose a very short propylene-oxide chain consisting of up to one unit of propylene oxide directly connected to a 2-propyl-heptanol radical having "n" *less* than one and an ethylene-oxide chain of at least 2 to 14 units. Dahlgren only discloses that 2-propyl-heptanol is connected to at least two alkyleneoxy groups of the same type having 2 to 4 carbon atoms or, in the alternative, 2-propyl-heptanol is connected with ethylene oxide and further with an alkyleneoxy group having 3 to 4 carbon atoms. Dahlgren discloses that the prepared alkoxylates have low foaming (see page 2, lines 29-32; examples on pages 4-5). Dahlgren does not disclose that the composition comprising his alkoxylates has a low content of residual alcohol. Dahlgren does not disclose that his alkoxylates comprise specific amount of zinc and cobalt.

Dahlgren does not disclose a method for the preparation of the composition of Claim 9. Dahlgren discloses that alkoxylates are prepared by a conventional method in the presence of conventional alkali catalysts, for example, potassium hydroxide or sodium hydroxide (p. 2,

table on page 4). Dahlgren states that using the conventional catalyst gives a narrower distribution of added ethylene oxide than any alkali catalyst such as sodium hydroxide or potassium hydroxide. Dahlgren does not disclose using a double metal cyanide compound as a catalyst.

Given the disclosure of Dahlgren, one skilled in the art would not be motivated to synthesize a compound of formula I of the invention having a low content of the residual alcohol. Further, one of ordinary skill in the art would not have had a reasonable expectation of success because it is surprising that the residual alcohol content of the claimed composition is lower than would be expected in theory (page 4 of the specification).

Specifically, as disclosed in the specification on pages 4, 7-8, and 12, the ethoxylation of alcohols, in particular, has the problem that the alcohols do not completely react. This leads to a high content of residual alcohol in the resultant alkoxylation products. The avoidance of relatively large amounts of residual alcohol present in the product is advantageous for odor reasons. The alcohol mixtures used according to the invention generally have an intrinsic odor which can be suppressed to the greatest possible extent through complete alkoxylation. Alkoxylates obtained by customary processes often have an intrinsic odor which is troublesome for many applications. The problem of bad odor of compositions comprising the mentioned alkoxylates can be solved by the alkoxylation composition according to the invention having low residual alcohol content. Furthermore, the claimed composition has improved wetting on hard surfaces, improved emulsifying behavior and a low critical micelle concentration, see page 2, lines 18-27.

The alkoxylates present in the composition according to the invention require only one propylene oxide block of very short length bonded directly to the alcohol to reduce the residual alcohol content in carrying out, firstly propoxylation followed by ethoxylation, the content of residual alcohol in the alkoxylates can be reduced since propylene oxide is added

evenly to the alcohol component. In contrast to this, ethylene oxide reacts preferentially with ethoxylates, meaning that, if ethylene oxide is used initially with the reaction of the alcohols, both a broad homolog distribution and also a high content of residual alcohol result, see page 7, lines 10-15 of the instant specification.

Further, one would not have had a reasonable expectation of success because it is surprising that the residual alcohol content and the composition according to the invention, which have a defined amount of propylene oxide and ethylene oxide is lower than would be expected in theory (page 4). From residual alcohol content of products which contain only propylene oxide or ethylene oxide is possible to determine an expected value which is higher than the residual alcohol content actually determined for the whole polymers. Dahlgren does not point in this direction. Dahlgren discloses that the compounds comprising 2-propyl heptanol connected to ethylene oxide and further to alkylene oxide having lower foaming than the corresponding compounds without any alkyleneoxy groups.

Applicants request the rejection be withdrawn.

Claims 9 and 16 are rejected under 35 U.S.C. § 103(a) as being obvious over Hoffarth, U.S. Patent No. 5,705,476.

Hoffarth discloses a composition necessarily always comprising substances of formula Ia, b, and/or c and formula II and, optionally, formula III (col. 3, lines 48-65). Formula Ic discloses alkoxyates wherein  $R_1$  denotes straight chain or branched  $C_{4-20}$  alkyls, and p and q are 1 to 10. Hoffarth discloses that the combination of the compounds of formulas I and II assures good water dispersion (wetting) and low foaming characteristics. Hoffarth further states that compounds of formula I, and specifically Ic, afford wetting property. However, Hoffarth doesn't concern with the problem of odor and doesn't disclose that an alkoxyate composition having a low content of residual alcohols. As disclosed in the

specification, a low content of the residual alcohol can only be achieved if alcohols react with a specific amount of propyleneoxy and thereafter with ethyleneoxy to provide complete alkoxylation. Thus, a low content of residual alcohols are achieved if the only alkoxylation in a composition are alkoxylation of formula (I). Hoffarth's composition necessary always comprises other alkoxylation that are not known to have complete alkoxylation. Therefore, Hoffarth's composition does not have a low content of alcohols.

Also, Hoffarth does not disclose that his composition comprises specific amount of zinc and cobalt, which is impotent for complete alkoxylation.

Hoffarth doesn't disclose a method of claim 13 for producing the composition of Claim 9. Hoffarth discloses that alkoxylation were prepared by methods customary in industry with KOH catalysis (col. 4, lines 28-36). Hoffarth also does not disclose using a double metal cyanide compound as a catalyst. Hoffarth does not disclose producing alkoxylation by conducting 2-propyl heptane with propyleneoxy and further with ethyleneoxy.

Hoffarth discloses that his composition can be produced by reacting ethylene oxide or propylene oxide with aliphatic alcohols, cyclo alcohols, phenyl and alkenols (col. 3, lines 1-11). Hoffarth discloses that using pure propoxylation is undesirable because they have insufficient water solubility (col. 2, lines 23-31). Therefore, Hoffarth suggests mixing compounds of formula I and formula II (pure propoxylation), wherein compounds of formula I provides a good wetting property and compounds of formula II provide low foaming characteristics.

Given the disclosure of Hoffarth, one skilled in the art would not be motivated to synthesize a compound of claimed formula I comprising a low content of residual alcohols because Hoffarth suggests combining various alkoxylation that are not known to undergo complete alkoxylation and, therefore, do not have a low content of the residual alcohols. In fact, Hoffarth teaches away from the invention because he suggests that a composition

necessary always comprise compounds of formulas (I) and (II) and, therefore, has a high content of alcohols.

Further, one of ordinary skill in the art would not have had a reasonable expectation of success because it is surprising that the residual alcohol content of the claimed composition is lower than would be expected in theory.

Applicants request the rejection be withdrawn.

Claims 12 and 13 are rejected under 35 U.S.C. § 103(a) as being obvious over Dahlgren, WO 94/11331, in view of Clement, WO 01/04183.

Dahlgren does not disclose a composition and the method of preparation of the composition of Claim 9, as set forth above. Clement does not offset the omission of Dahlgren.

Clement does not disclose the composition of Claim 9 and further does not disclose a method of preparing the composition of Claim 9. Clement only discloses a process for preparing ethylene oxide and/or propylene oxide alcohols with metal cyanide catalysts because propylene oxide readily undergoes a rearrangement reaction in the presence of strong bases and, therefore, it is difficult to prepare polypropylene oxide polymers of above 3000 equivalent weight in an anionic polymerization catalyzed by a strong base (page 2). Clement discloses that lower equivalent weight polypropylene oxide polymers can be made using strong basis catalyst (page 2). Thus, Clement teaches away from using his catalyst for the claimed very short chain of alkyleneoxides.

Clement discloses that propylene oxide and/or other alkaline oxides can be used to activate catalyst, at which point ethylene oxide is added, and, therefore, a certain amount of the other alkylene oxides will polymerise onto the initiator compound (page 3). Thus, Clement does not disclose that specifically structured compounds comprising a very short



propylene-oxide chain consisting of up to one unit of propylene oxide directly connected to a 2-propyl-heptanol radical and thereafter to 2-14 ethylene oxide chains can be obtained with his method. Thus, one would not have reasonably expected that using Clement's method would yield the claimed compound.

Moreover, Clement does not disclose that the composition resulted from the claimed method has the content of zinc greater than 0 and less than or equal to 15 ppm, or the content of cobalt greater than 0 or less than or equal to 7 ppm, or the content of zinc greater than 0 and less than or equal to 15 ppm and the content of cobalt greater than 0 and less than or equal to 7 ppm.

Applicants request that the rejection be withdrawn.

Claims 12 and 13 are rejected under 35 U.S.C. § 103(a) as being obvious over Hoffarth, U.S. Patent No. 5,705,476, in view of Clement, WO 01/04183.

Hoffarth does not disclose a composition and the method of preparation of the composition of Claim 9, as set forth above. Clement does not offset the omission of Hoffarth.

Clement does not disclose the composition of Claim 9 and further does not disclose a method of preparing the composition of Claim 9. Clement only discloses a process for preparing ethylene oxide and/or propylene oxide alcohols with metal cyanide catalysts because propylene oxide readily undergoes a rearrangement reaction in the presence of strong bases and, therefore, it is difficult to prepare polypropylene oxide polymers of above 3000 equivalent weight in an anionic polymerization catalyzed by a strong base. Clement discloses that lower equivalent weight polypropylene oxide polymers can be made using strong basis catalyst. Thus, Clement teaches away from using his catalyst for the claimed very short chain of alkyleneoxides.

Clement discloses that propylene oxide and /or other alkaline oxides can be used to activate catalyst, at which point ethylene oxide is added, and, therefore, a certain amount of the other alkylene oxides will polymerise onto the initiator compound (page 3). Thus, Clement does not disclose that specifically structured compounds comprising a very short propylene-oxide chain consisting of up to one unit of propylene oxide directly connected to a 2-propyl-heptanol radical and thereafter to 2-14 ethylene oxide chains can be obtained with his method. Thus, one would not have reasonably expected that using Clement's method would yield the claimed compound.

Moreover, Clement does not disclose that the composition resulted from the claimed method has the content of zinc greater than 0 and less than or equal to 15 ppm, or the content of cobalt greater than 0 or less than or equal to 7 ppm, or the content of zinc greater than 0 and less than or equal to 15 ppm and the content of cobalt greater than 0 and less than or equal to 7 ppm.

Applicants request that the rejection be withdrawn.

Claims 9-16 are rejected as being indefinite. Applicants amended the claims and request that the rejection be withdrawn.

A Notice of Allowance is earnestly solicited.

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